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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/728,235

12/03/2003

Satoshi Okamura

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EXAMINER

PETERSON, CHRISTOPHER K

ART UNIT

PAPER NUMBER

2622

MAIL DATE

DELIVERY MODE

10/14/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/728,235	Applicant(s) OKAMURA, SATOSHI	
	Examiner CHRISTOPHER K. PETERSON	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/13/2009 has been entered.

Response to Arguments

2. Examiner withdraws the rejection of claims 13 – 18 under 35 U.S.C. 112, first paragraph.

3. Applicant's arguments filed 8/13/2009 have been fully considered but they are not persuasive.

First, in regard to claims 15 - 20, the Applicant argues that AAPA (Applicant's Admitted Prior Art) in view of Shibuya references do not teach the "compensating the loss in exposure amount caused by delay in closing of the light-shielding unit by changing the set exposure period if the exposure period is longer than a predetermined period, and by changing a gain to be applied to the charge signal if the exposure period is equal to or shorter than the predetermined period" (See Remarks, Pg. 11). The

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Examiner respectfully disagrees. Specifically, noting the AAPA reference, Fig. 3 and 4 and Para 17 - 19 shows the "compensating the loss in exposure amount caused by delay in closing of the light-shielding unit by changing the set exposure period if the exposure period is longer than a predetermined period". AAPA (Fig. 3 and 4) teaches the a control unit (109) that changes the set exposure period (correction amount of an electronic shutter) based on the compensation amount (closing time information) determined by said determination unit (109) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18). Examiner analyzes this to mean the control unit adjusts the exposure period based on the time it takes the shutter to close to provide a properly exposed image. Shibuya reference, Fig. 3 and Col. 7, lines 9 – 61 shows the "by changing a gain to be applied to the charge signal if the exposure period is equal to or shorter than the predetermined period ". Shibuya teaches said control unit (exposure control means 305) changes the exposure period (shortest times) based on the predetermined amount and changes the gain (increase by one step) based on the second compensation amount (Col. 7, lines 9 – 61). Shibuya teaches the exposure time control signal S14 coincides with the longest exposure time and the judgment result S31 is to lengthen the exposure time, the exposure time control signal S14 is set at the shortest time S36 as supplied from exposure time memory device 304 and the gain control means 303 raises the gain control signal S13 by one step (second compensation) (Col. 7, lines 48 – 54). Applicant argues the exposure period is longer than a predetermined period, the loss is first compensated by changing the exposure period, and **only when** the loss cannot be fully compensated by changing

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the exposure period, then the gain is changed so as to compensate the remaining loss (Remarks Page 12). Examiner does not read this limitation in the claims. Claim set dated 8/13/2009 do not teach the loss is first compensated by changing the exposure period, and **only when** the loss cannot be fully compensated by changing the exposure period, then the gain is changed so as to compensate the remaining loss. For the above reasons, the Examiner believes the AAPA (Applicant's Admitted Prior Art) in view of Shibuya references do teach the limitations of claim 15 - 20, and the rejection to the claim will be set forth below.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. **Claims 15 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (AAPA) (US Patent Pub. # 2004/0119835) in view of Shibuya (US Patent # 5,986,705)**

As to claim 15, AAPA (Fig. 3 and 4) teaches an image sensing apparatus comprising:

- an image sensing element (image sensor 103) that outputs a charge signal in accordance with a light amount of an object image formed on a light-receiving surface (Para 4);
- a light-shielding unit (stop 102) that shields said image sensing element from incident light (Para 4);

- a determination unit (system control circuit 109) that determines a compensation amount (correction amount) for compensating a loss in exposure amount (light amount correction) for said image sensing element (103) caused by delay in closing of said light- shielding unit (Para 17);
- a setting unit (image sensing mode selection switch 115) that sets an exposure period of said image sensing element (Para 8);
- a control unit (109) that changes the set exposure period (correction amount of an electronic shutter) based on the compensation amount (closing time information) determined by said determination unit (109) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18).

AAPA does not teach changes a gain to be applied to the charge signal based on the compensation amount determined by said determination unit if the exposure period is equal to or shorter than the predetermined period. Shibuya teaches an exposure adjustment apparatus determines, based on the level of a signal of an object converted by a solid state image sensing device, whether the exposure time or the gain is to be decreased, increased or maintained, and controls the gain of an amplifier and the drive pulse to be generated by a drive pulse generator (Abstract). Shibuya (Fig. 3) teaches changes a gain (gain control means 303) to be applied to the charge signal based on the compensation amount determined (S31) by said determination unit (exposure judgment means 301) if the exposure period (shorten the exposure time) is equal to or shorter than the predetermined period (exposure time memory device 304) (Col. 7, lines

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9 – 61). Shibuya teaches when the exposure time control signal S14 coincides with the shortest exposure time S36 delivered from exposure time memory device 304, and the judgment result S31 is to shorten the exposure time, the exposure time control signal S14 is set at the longest time and the gain control means 303 lowers the gain control signal S13 by one step (Col. 7, lines 35 – 41). Shibuya teaches wherein, if the set exposure period (exposure time) is longer than the predetermined period (reference value) and if the compensation amount determined by said determination unit (exposure judgment means 301) is greater than a predetermined amount (reference value), said determination unit (exposure judgment means 301) determines a second compensation amount for gain (increase gain by one step) to be applied to the charge signal based on an excess of the compensation amount over the predetermined amount (reference value), and said control unit (exposure control means 305) changes the exposure period (shortest times) based on the predetermined amount and changes the gain (increase by one step) based on the second compensation amount (Col. 7, lines 9 – 61). Shibuya teaches the exposure time control signal S14 coincides with the longest exposure time and the judgment result S31 is to lengthen the exposure time, the exposure time control signal S14 is set at the shortest time S36 as supplied from exposure time memory device 304 and the gain control means 303 raises the gain control signal S13 by one step (second compensation) (Col. 7, lines 48 – 54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided gain control method as taught by Shibuya to the method of correcting light amount losses caused by mechanical shutter operation of AAPA, because a compact,

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vibration-resistant and inexpensive exposure control system, in which the level of output signal is controlled so as the rate of change of the output from the amplifying means, or the solid state image sensing device, is suppressed to be below a certain specific value whenever the brightness of an object changes (Col. 4, lines 28 – 38 of Shibuya).

As to claim 16, AAPA (Fig. 3 and 4) teaches an image sensing apparatus comprising:

- an image sensing element (image sensor 103) that outputs a charge signal in accordance with a light amount of an object image formed on a light-receiving surface (Para 4);
- a light-shielding unit (stop 102) that shields said image sensing element from incident light (Para 4);
- a determination unit (system control circuit 109) that determines a compensation amount (correction amount) for compensating a loss in exposure amount (light amount correction) for said image sensing element (103) caused by delay in closing of said light- shielding unit (Para 17);
- a setting unit (image sensing mode selection switch 115) that sets an exposure period of said image sensing element (Para 8);
- a control unit (109) that changes the set exposure period (correction amount of an electronic shutter) based on the compensation amount (closing time information) determined by said determination unit (109) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18).

AAPA does not teach changes a gain to be applied to the charge signal based on the compensation amount determined by said determination unit if the exposure period is equal to or shorter than the predetermined period. Shibuya teaches an exposure adjustment apparatus determines, based on the level of a signal of an object converted by a solid state image sensing device, whether the exposure time or the gain is to be decreased, increased or maintained, and controls the gain of an amplifier and the drive pulse to be generated by a drive pulse generator (Abstract). Shibuya (Fig. 3) teaches changes a gain (gain control means 303) to be applied to the charge signal based on the compensation amount determined (S31) by said determination unit (exposure judgment means 301) if the exposure period (shorten the exposure time) is equal to or shorter than the predetermined period (exposure time memory device 304) (Col. 7, lines 9 – 61). Shibuya teaches when the exposure time control signal S14 coincides with the shortest exposure time S36 delivered from exposure time memory device 304, and the judgment result S31 is to shorten the exposure time, the exposure time control signal S14 is set at the longest time and the gain control means 303 lowers the gain control signal S13 by one step (Col. 7, lines 35 – 41). Shibuya teaches wherein, if the set exposure period (exposure time) is longer than the predetermined period (reference value) and if the compensation amount determined by said determination unit (exposure judgment means 301) is greater than a predetermined amount (reference value), said determination unit (exposure judgment means 301) determines a second compensation amount for gain (increase gain by one step) to be applied to the charge signal based on an excess of the compensation amount over the predetermined amount (reference

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value), and said control unit (exposure control means 305) changes the exposure period (shortest times) based on the predetermined amount and changes the gain (increase by one step) based on the second compensation amount (Col. 7, lines 9 – 61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided gain control method as taught by Shibuya to the method of correcting light amount losses caused by mechanical shutter operation of AAPA, because a compact, vibration-resistant and inexpensive exposure control system, in which the level of output signal is controlled so as the rate of change of the output from the amplifying means, or the solid state image sensing device, is suppressed to be below a certain specific value whenever the brightness of an object changes (Col. 4, lines 28 – 38 of Shibuya).

As to claim 17, AAPA (Fig. 3 and 4) teaches an image sensing apparatus comprising:

- an image sensing element (image sensor 103) that outputs a charge signal in accordance with a light amount of an object image formed on a light-receiving surface (Para 4);
- a light-shielding unit (stop 102) that shields said image sensing element from incident light (Para 4);
- a determination unit (system control circuit 109) that determines a compensation amount (correction amount) for compensating a loss in exposure amount (light amount correction) for said image sensing element (103) caused by delay in closing of said light- shielding unit (Para 17);

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- a setting unit (image sensing mode selection switch 115) that sets an exposure period of said image sensing element (Para 8);
- a control unit (109) that changes the set exposure period (correction amount of an electronic shutter) based on the compensation amount (closing time information) determined by said determination unit (109) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18).

AAPA does not teach changes a gain to be applied to the charge signal based on the compensation amount determined by said determination unit if the exposure period is equal to or shorter than the predetermined period. Shibuya teaches an exposure adjustment apparatus determines, based on the level of a signal of an object converted by a solid state image sensing device, whether the exposure time or the gain is to be decreased, increased or maintained, and controls the gain of an amplifier and the drive pulse to be generated by a drive pulse generator (Abstract). Shibuya (Fig. 3) teaches changes a gain (gain control means 303) to be applied to the charge signal based on the compensation amount determined (S31) by said determination unit (exposure judgment means 301) if the exposure period (shorten the exposure time) is equal to or shorter than the predetermined period (exposure time memory device 304) (Col. 7, lines 9 – 61). AAPA teaches further comprising an image sensing mode setting unit (115) that sets an image sensing mode, wherein even if the image sensing mode set by said image sensing mode setting unit (115) is an image sensing mode of controlling exposure by keeping an exposure period set by said setting unit (115) (Para 8).

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Shibuya teaches said control unit (exposure control means 305) changes the set exposure period (exposure time) based on the compensation amount determined by said determination unit (301) if the exposure period (exposure time) is longer than a predetermined period (reference value) (Col. 7, lines 9 – 61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided gain control method as taught by Shibuya to the method of correcting light amount losses caused by mechanical shutter operation of AAPA, because a compact, vibration-resistant and inexpensive exposure control system, in which the level of output signal is controlled so as the rate of change of the output from the amplifying means, or the solid state image sensing device, is suppressed to be below a certain specific value whenever the brightness of an object changes (Col. 4, lines 28 – 38 of Shibuya).

As to claim 18, this claim differs from claim 15 only in that claim 15 is an apparatus claim whereas claim 18 is a method. Thus method claim 18 is analyzed as previously discussed with respect to claim 15 above.

As to claim 19, AAPA (Fig. 3 and 4) teaches a control method for an image sensing apparatus having an image sensing element that outputs a charge signal in accordance with a light amount of an object image formed on a light-receiving surface and a light-shielding unit that shields said image sensing element from incident light, said method comprising:

- determining a compensation amount (correction amount) for compensating a loss in exposure amount (light amount correction) for said image sensing element (103) caused by delay in closing of said light-shielding unit (Para 17);
- setting an exposure period (image sensing mode selection switch 115) of said image sensing element (103) (Para 8);
- changing the set exposure period (correction amount of an electronic shutter) based on the determined compensation amount (closing time information) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18)

AAPA does not teach changes a gain to be applied to the charge signal based on the compensation amount determined by said determination unit if the exposure period is equal to or shorter than the predetermined period. Shibuya teaches an exposure adjustment apparatus determines, based on the level of a signal of an object converted by a solid state image sensing device, whether the exposure time or the gain is to be decreased, increased or maintained, and controls the gain of an amplifier and the drive pulse to be generated by a drive pulse generator (Abstract). Shibuya (Fig. 3) teaches changes a gain (gain control means 303) to be applied to the charge signal based on the compensation amount determined (S31) by said determination unit (exposure judgment means 301) if the exposure period (shorten the exposure time) is equal to or shorter than the predetermined period (exposure time memory device 304) (Col. 7, lines 9 – 61). Shibuya teaches when the exposure time control signal S14 coincides with the

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shortest exposure time S36 delivered from exposure time memory device 304, and the judgment result S31 is to shorten the exposure time, the exposure time control signal S14 is set at the longest time and the gain control means 303 lowers the gain control signal S13 by one step (Col. 7, lines 35 – 41). Shibuya teaches wherein, if the set exposure period (exposure time) is longer than the predetermined period (reference value) and if the compensation amount determined by said determination unit (exposure judgment means 301) is greater than a predetermined amount (reference value), said determination unit (exposure judgment means 301) determines a second compensation amount for gain (increase gain by one step) to be applied to the charge signal based on an excess of the compensation amount over the predetermined amount (reference value), and said control unit (exposure control means 305) changes the exposure period (shortest times) based on the predetermined amount and changes the gain (increase by one step) based on the second compensation amount (Col. 7, lines 9 – 61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided gain control method as taught by Shibuya to the method of correcting light amount losses caused by mechanical shutter operation of AAPA, because a compact, vibration-resistant and inexpensive exposure control system, in which the level of output signal is controlled so as the rate of change of the output from the amplifying means, or the solid state image sensing device, is suppressed to be below a certain specific value whenever the brightness of an object changes (Col. 4, lines 28 – 38 of Shibuya).

As to claim 20, AAPA (Fig. 3 and 4) teaches a control method for an image sensing apparatus having an image sensing element that outputs a charge signal in accordance with a light amount of an object image formed on a light-receiving surface and a light-shielding unit that shields said image sensing element from incident light, said method comprising:

- determining a compensation amount (correction amount) for compensating a loss in exposure amount (light amount correction) for said image sensing element (103) caused by delay in closing of said light-shielding unit (Para 17);
- setting an exposure period (image sensing mode selection switch 115) of said image sensing element (103) (Para 8);
- changing the set exposure period (correction amount of an electronic shutter) based on the determined compensation amount (closing time information) if the exposure period is longer than a predetermined period (predetermined timing) (Para 17 and 18)
- setting an image sensing mode (image sensing mode selection switch 115) (Para 8);

AAPA does not teach changes a gain to be applied to the charge signal based on the compensation amount determined by said determination unit if the exposure period

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is equal to or shorter than the predetermined period. Shibuya teaches an exposure adjustment apparatus determines, based on the level of a signal of an object converted by a solid state image sensing device, whether the exposure time or the gain is to be decreased, increased or maintained, and controls the gain of an amplifier and the drive pulse to be generated by a drive pulse generator (Abstract). Shibuya (Fig. 3) teaches changes a gain (gain control means 303) to be applied to the charge signal based on the compensation amount determined (S31) by said determination unit (exposure judgment means 301) if the exposure period (shorten the exposure time) is equal to or shorter than the predetermined period (exposure time memory device 304) (Col. 7, lines 9 – 61). Shibuya teaches when the exposure time control signal S14 coincides with the shortest exposure time S36 delivered from exposure time memory device 304, and the judgment result S31 is to shorten the exposure time, the exposure time control signal S14 is set at the longest time and the gain control means 303 lowers the gain control signal S13 by one step (Col. 7, lines 35 – 41). Shibuya (Fig. 11A) teaches wherein even if the set image sensing mode (115) is an image sensing mode of controlling exposure (exposure adjustment means 1103) by keeping a set exposure period (exposure time), the set exposure period (exposure time) is changed based on the determined compensation amount if the exposure period is longer than a predetermined period (Col. 13, lines 35 - 65). Shibuya teaches numeral 1101 denotes a lens for focusing the image of an object, 1102 a solid state image sensing device for doing photoelectric conversion on an object image focused through said lens 1101, 1103 an exposure adjustment means for adjusting the exposure time of solid state image

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sensing device 1102 based on output of solid state image sensing device 1102, and 1104 a drive pulse generating means for generating a drive pulse for solid state image sensing device 1102. Exposure adjustment means 1103 determines, based on the signal level of S111, whether the present exposure time is to be decreased, increased or maintained (Col. 13, lines 35 - 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided gain control method as taught by Shibuya to the method of correcting light amount losses caused by mechanical shutter operation of AAPA, because a compact, vibration-resistant and inexpensive exposure control system, in which the level of output signal is controlled so as the rate of change of the output from the amplifying means, or the solid state image sensing device, is suppressed to be below a certain specific value whenever the brightness of an object changes (Col. 4, lines 28 – 38 of Shibuya).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER K. PETERSON whose telephone number is (571)270-1704. The examiner can normally be reached on Monday - Friday 6:30 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Sinh can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. K. P./
Examiner, Art Unit 2622
10/5/2009

/Sinh Tran/
Supervisory Patent Examiner, Art Unit 2622